WHAT IS CLAIMED IS:

1. An X-ray detector comprising a photoelectric converting section of a pixel unit, scintillator pixels containing a fluorescent material I formed on individual pixels of the photoelectric converting section, and a partition containing a fluorescent material and/or a nonfluorescent material disposed between the scintillator pixels,

wherein, when an average particle diameter of the fluorescent material I is Ds, and an average particle diameter of the fluorescent material and/or the nonfluorescent material is Dw, $Ds>Dw$ is satisfied.

2. The X-ray detector according to claim 1, wherein, when a thickness of the scintillator pixels is Ts, an average particle diameter of the fluorescent material I in the scintillator pixels is Ds, and a packing density of the fluorescent material I within the scintillator pixels is Fs, $Ds \geq Ts \cdot Fs/10$ is satisfied.

3. The X-ray detector according to claim 1 or 2, wherein, when a thickness of the partition is Tw, an average particle diameter of the fluorescent material and/or the nonfluorescent material within the partition is Dw, and a packing density of the fluorescent material and/or the nonfluorescent material within the partition is Fw, $Dw \leq Tw \cdot Fw/10$ is satisfied.

4. The X-ray detector according to claim 3, wherein the scintillator pixels containing the fluorescent material I

are formed of a sintered body of the fluorescent material I.

5. The X-ray detector according to any of claims 1 to 4, wherein the partition contains a fluorescent material II which has optical characteristics different from those of the fluorescent material I contained in the scintillator pixels and the longest wavelength of fluorescent light equal to or longer than the shortest wavelength of fluorescent light of the fluorescent material I.

6. The X-ray detector according to any of claims 1 to 4, wherein the partition contains a fluorescent material III which has optical characteristics different from those of the fluorescent material I contained in the scintillator pixels and the shortest wavelength of fluorescent light equal to or shorter than the longest fluorescence excitation wavelength of the fluorescent material I.

7. The X-ray detector according to any of claims 1 to 6, wherein the fluorescent material I is a fluorescent material having Gd_2O_2S or CsI as a base material.

8. The X-ray detector according to any of claims 1 to 6, wherein the fluorescent material II or III is a fluorescent material having Gd_2O_2S as a base material.

9. The X-ray detector according to claim 6 or 8, wherein the longest wavelength of fluorescent light of the fluorescent material III is in an ultraviolet region.

10. A method for producing the X-ray detector according to any of claims 1 to 9, comprised of forming scintillator pixels on a photoelectric converting section of a pixel unit and forming a partition between the scintillator

pixels, the method comprising:

forming a layer containing a fluorescent material I on the photoelectric converting section of the pixel unit;

forming the scintillator pixel by removing a portion, which is to be the partition, from the layer; and

forming the partition by filling a material containing a fluorescent material II and/or a fluorescent material III.

11. A method for producing the X-ray detector according to any of claims 1 to 9, comprised of forming scintillator pixels on a photoelectric converting section of a pixel unit and forming a partition between the scintillator pixels, the method comprising:

forming a layer containing a fluorescent material II and/or a fluorescent material III on the photoelectric converting section of the pixel unit;

forming the partition by removing a portion other than the portion, which becomes the partition, from the layer; and

forming the scintillator pixels by filling the portion removed in the partition forming step with a material containing the fluorescent material I.

12. A method for producing the X-ray detector according to any of claims 1 to 9, comprised of forming scintillator pixels on a photoelectric converting section of a pixel unit and forming a partition between the scintillator pixels, the method comprising:

forming a layer of an organic material such as a resin material or an inorganic material such as a metal material on the photoelectric converting section of the pixel unit;

forming a temporary pixel of the resin material or the metal material by removing a portion, which becomes the partition, from the layer;

forming the partition by filling the portion removed in the temporary pixel forming step with a material containing the fluorescent material II and/or the fluorescent material III;

removing the temporary pixel; and

forming the scintillator pixels by filling the portion where the temporary pixel is removed with a material containing the fluorescent material I.

13. A method for producing the X-ray detector according to any of claims 1 to 9, comprised of forming scintillator pixels on a photoelectric converting section of a pixel unit and forming a partition between the scintillator pixels, the method comprising:

forming a layer of an organic material such as a resin material or an inorganic material such as a metal material on the photoelectric converting section of the pixel unit;

forming a temporary partition of the resin material or the metal material by removing a portion other than the portion, which becomes the partition, from the layer;

forming the scintillator pixels by filling the portion removed in the temporary partition forming step with a material containing the fluorescent material I;

removing the temporary partition; and

forming the partition by filling the portion where the temporary partition is removed with a material containing a

fluorescent material II and/or a fluorescent material III.